

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT



**SUBSURFACE INVESTIGATION**

STATE JOB NO. 090501

FEDERAL AID PROJECT NO. ER-0051(18) & ER-0051(19)

HWY. 7 SLIDE REPAIR (NEWTON CO.) (S)

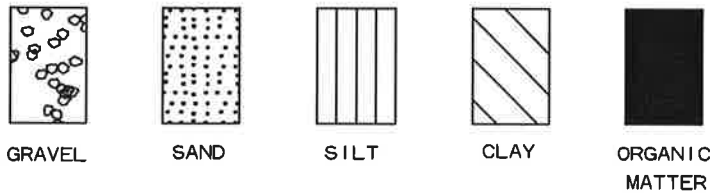
STATE HIGHWAY 7 SECTION 18

IN NEWTON COUNTY

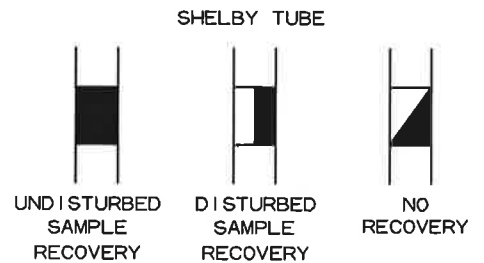
The information contained herein was obtained by the Department for design and estimating purposes only. It is being furnished with the express understanding that said information does not constitute a part of the Proposal or Contract and represents only the best knowledge of the Department as to the location, character and depth of the materials encountered. The information is only included and made available so that bidders may have access to subsurface information obtained by the Department and is not intended to be a substitute for personal investigation, interpretation and judgment of the bidder. The bidder should be cognizant of the possibility that conditions affecting the cost and/or quantities of work to be performed may differ from those indicated herein.

# LEGEND

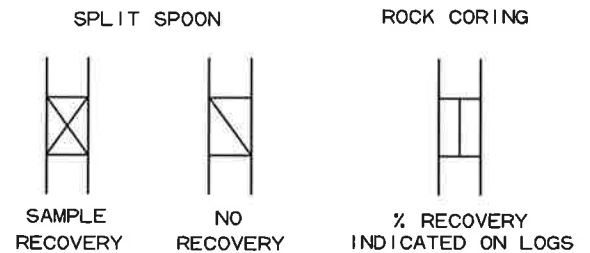
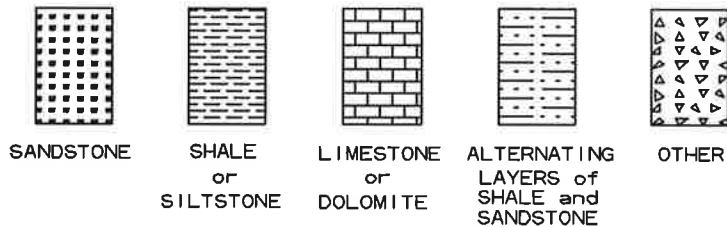
## SOIL TYPES (SHOWN IN SYMBOL COLUMN) (PREDOMINANT TYPE SHOWN HEAVY)



## SAMPLER TYPES (SHOWN IN SAMPLE COLUMN)



## ROCK TYPES (SHOWN IN SYMBOL COLUMN)



## TERMS DESCRIBING CONSISTENCY OR CONDITION

GRANULAR SOIL		CLAY		CLAY-SHALE		SHALE	
*N <sup>o</sup> Value	Density	*N <sup>o</sup> Value	Consistency	*N <sup>o</sup> Value	Consistency	*N <sup>o</sup> Value	Consistency
0-4	Very Loose	0-1	Very Soft	0-1	Very Soft		
5-10	Loose	2-4	Soft	2-4	Soft	31-60	Soft
11-30	Medium Dense	5-8	Medium Stiff	5-8	Medium Stiff	Over 60	
31-50	Dense	9-15	Stiff	9-15	Stiff	More than 2'	
Over 50	Very Dense	16-30	Very Stiff	16-30	Very Stiff	Penetration	
		31-60	Hard	31-60	Hard	in 60 Blows	Medium Hard
		Over 60	Very Hard	Over 60	Very Hard	Less than 2'	
						Penetration	
						in 60 Blows	Hard

1. Ground water elevations indicated on boring logs represent ground water elevations at date or time shown on boring log. Absence of water surface implies that no ground water data is available but does not necessarily mean that ground water will not be encountered at locations or within the vertical reaches of these borings.
2. Borings represent subsurface conditions at their respective locations for their respective depths. Variations in conditions between or adjacent to boring locations may be encountered.
3. Terms used for describing soils according to their texture or grain size distribution are in accordance with the Unified Soil Classification System.

Standard Penetration Test – Driving a 2.0” O.D., 1-3/8” I.D. sampler a distance of 1.0 foot into undisturbed soil with a 140 pound hammer free falling a distance of 30 inches. It is customary to drive the spoon 6.0 inches to seat into undisturbed soil, then perform the test. The number of hammer blows for seating the spoon and performing the test are recorded for each 6 inches of penetration on the drill log. The field “N” Value (N<sub>f</sub>) can be obtained by

adding the bottom two numbers for example:  $\frac{6}{8-9} \Rightarrow 8+9 = 17 \text{ blows/ft}$ . The “N” Value corrected to 60% efficiency (N<sub>60</sub>) can be obtained by multiplying N<sub>f</sub> by the hammer correction factor published on the boring log.

**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 1  
PAGE 1 OF 1

JOB NO. 090501 (Internal Job # D09193) Newton  
JOB NAME: Hwy 7 Slide - Jasper  
STATION: 461+50  
LOCATION: .25' Left of Centerline  
LOGGED BY: David Allen

DATE: August 24, 2015  
TYPE OF DRILLING: Hollow Stem Auger -  
Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 28.4

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R O D
			SURFACE ELEVATION: 1714.1									
			Moist, Stiff, Brown Clay									
5			Moist, Stiff, Gray Clay with Gravel (Shale Fragments)							3 4-9		
10			SHALE - Highly Weathered, Soft, Gray							10 23-27		
15			SHALE - Highly Weathered, Medium Hard, Gray							11 29-37		
20			SHALE - Highly Weathered, Soft, Occasional Fractures, Gray								62	0
25			SHALE WITH FREQUENT SANDSTONE PARTINGS AND SEAMS - Weathered, Medium Hard, Gray								100	0
30			Boring Terminated									
35												

REMARKS:

**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 2  
PAGE 1 OF 1

JOB NO. 090501 (Internal Job # D09193) Newton  
JOB NAME: Hwy 7 Slide - Jasper  
STATION: 462+32  
LOCATION: 22' Left of Centerline  
LOGGED BY: David Allen

DATE: August 25, 2015  
TYPE OF DRILLING: Hollow Stem Auger -  
Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 29.3

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R O D
			SURFACE ELEVATION: 1708.4									
			Asphalt									
			Dry, Medium Dense, Gray Sandy Gravel (Base)									
			Moist, Stiff, Brown Clay									
5										4 5-8		
10			SHALE - Highly Weathered, Soft, Brown and Gray							11 20-20		
15			SHALE - Highly Weathered, Medium Hard, Gray							20 60 (5")	98	0
			SHALE - Highly Weathered, Soft, Gray									
20			SHALE - Highly Weathered, Medium Hard with Soft Layers, Gray								100	66
25			SHALE WITH FREQUENT SANDSTONE SEAMS AND LAYERS - Weathered, Medium Hard								96	52
30			Boring Terminated									
35												

REMARKS:

**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 3  
PAGE 1 OF 1

JOB NO. 090501 (Internal Job # D09193) Newton  
JOB NAME: Hwy 7 Slide - Jasper  
  
STATION: 463+45  
LOCATION: 21' Left of Centerline  
LOGGED BY: David Allen

DATE: August 25, 201  
TYPE OF DRILLING: Hollow Stem Auger -  
Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 23.5

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R Q D
			SURFACE ELEVATION: 1700.2									
			Asphalt									
			Dry, Dense, Gray Sandy Gravel (Base)									
			Moist, Brown Clay									
5			SHALE - Highly Weathered, Soft, Gray							10 15-22		
10			SHALE - Highly Weathered, Medium Hard, Gray							17 60 (4")	100	0
			SHALE WITH FREQUENT SANDSTONE SEAMS - Highly Weathered, Medium Hard with Soft Layers, Gray									
15			SHALE WITH FREQUENT SANDSTONE SEAMS - Highly Weathered, Soft with Medium Hard Layers, Gray								96	10
20			SHALE WITH FREQUENT SANDSTONE SEAMS - Highly Weathered, Medium Hard with Soft Layers, Gray								100	76
25			Boring Terminated									
30												
35												

REMARKS:

**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 4  
PAGE 1 OF 1

JOB NO. 090501 (Internal Job # D09193) Newton  
JOB NAME: Hwy 7 Slide - Jasper  
STATION: 464+98  
LOCATION: 21' Left of Centerline  
LOGGED BY: David Allen

DATE: August 26, 1015  
TYPE OF DRILLING: Hollow Stem Auger -  
Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 23.9

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R O D
			SURFACE ELEVATION: 1688.9									
			Asphalt									
			Dry, Dense, Gray Sandy Gravel (Base)									
			Dry, Soft, Brown and Gray Clay (Highly Weathered Shale)									
5			SHALE - Highly Weathered, Soft, Gray							10 21-37		
10			SHALE - Highly Weathered, Medium Hard, Gray							18 60 (4")	88	0
15			SHALE WITH OCCASIONAL SANDSTONE PARTINGS - Highly Weathered, Medium Hard with Soft Layers, Gray								100	58
20			SHALE WITH OCCASIONAL SANDSTONE PARTINGS - Highly Weathered, Medium Hard, Occasional Fractures, Gray								98	72
25			Boring Terminated									
30												
35												

REMARKS:

**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 5  
PAGE 1 OF 2

JOB NO. 090501 (Internal Job # D09193) Newton  
JOB NAME: Hwy 7 Slide - Jasper  
  
STATION: 461+48  
LOCATION: 18' Right of Centerline  
LOGGED BY: David Allen

DATE: September 1, 2015  
TYPE OF DRILLING: Hollow Stem Auger -  
Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 44.5

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R O D
			SURFACE ELEVATION: 1713.6									
5		X	Moist, Stiff, Brown Clay with Sand and Trace Gravel							2 5-7		
10		X	Moist, Very Stiff, Gray Clay							4 7-11		
15		X	SHALE - Highly Weathered, Medium Hard, Gray							15 33-41		
20			SHALE - Highly Weathered, Soft, Gray								94	0
25											60	0
30											98	0
35			SHALE WITH OCCASSIONAL SANDSTONE LAYERS - Highly Weathered, Soft to Medium Hard, Gray								100	0

REMARKS:


**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 5  
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JOB NO. 090501 (Internal Job # D09193) Newton  
JOB NAME: Hwy 7 Slide - Jasper  
STATION: 461+48  
LOCATION: 18' Right of Centerline  
LOGGED BY: David Allen

DATE: September 1, 2015  
TYPE OF DRILLING: Hollow Stem Auger -  
Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 44.5

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R Q D
			SURFACE ELEVATION: 1713.6									
40			SHALE WITH OCCASIONAL SANDSTONE SEAMS AND LAYERS - Weathered, Medium Hard, Gray								100	16
45			Boring Terminated								100	57
50												
55												
60												
65												
70												

REMARKS:



**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

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JOB NO. 090501 (Internal Job # D09193) Newton  
JOB NAME: Hwy 7 Slide - Jasper  
STATION: 464+97  
LOCATION: 20' Right of Centerline  
LOGGED BY: David Allen

DATE: September 2, 2015  
TYPE OF DRILLING: Hollow Stem Auger -  
Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 29.1

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R Q D
			SURFACE ELEVATION: 1688.9									
5		X	Moist, Medium Stiff, Brown Sandy Clay with Gravel							3 5-3		
10		X	Moist, Very Stiff, Gray Clay with Gravel (Shale Fragments)							5 8-14		
15		X	SHALE - Highly Weathered, Medium Hard, Gray							17 33-50		
			SHALE WITH OCCASIONAL SANDSTONE LAYERS - Highly Weathered, Soft, Gray								76	0
20			SHALE - Highly Weathered, Soft, Gray								100	0
25			SHALE WITH OCCASIONAL SANDSTONE SEAMS - Weathered to Slightly Weathered, Medium Hard, Occasional Fractures, Dark Gray								92	62
30			Boring Terminated									
35												

REMARKS:

**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

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JOB NO. 090501 (Internal Job # D09193) Newton  
JOB NAME: Hwy 7 Slide - Jasper  
STATION: 464+97  
LOCATION: 46' Right of Centerline  
LOGGED BY: David Allen

DATE: September 14, 2015  
TYPE OF DRILLING: Hollow Stem Auger -  
Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 34

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R O D
			SURFACE ELEVATION: 1690									
5			Moist, Soft, Brown Clay with Gravel							1 2-1		
10			Moist, Soft, Brown Clay							8 10-17		
15			SHALE - Highly Weathered, Very Soft, Brown and Gray							13 32-36		
20			SHALE - Highly Weathered, Medium Hard, Brown and Gray								82	0
			SHALE WITH OCCASIONAL CLAY LAYERS - Highly Weathered, Soft, Occasional Fractures, Brown and Gray									
25			SHALE WITH OCCASIONAL SANDSTONE LAYERS - Highly Weathered, Medium Hard with Soft Layers, Occasional Fractures, Dark Gray								100	0
30			SHALE WITH OCCASIONAL SANDSTONE LAYERS - Weathered, Medium Hard, Occasional Fractures, Dark Gray								100	36
35			SHALE WITH OCCASIONAL SANDSTONE LAYERS - Weathered, Medium Hard, Dark Gray								100	64
			Boring Terminated									

REMARKS:

**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 8  
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JOB NO. 090501 (Internal Job # D09193) Newton  
JOB NAME: Hwy 7 Slide - Jasper  
STATION: 463+99  
LOCATION: 46' Right of Centerline  
LOGGED BY: David Allen

DATE: September 15, 2015  
TYPE OF DRILLING: Hollow Stem Auger -  
Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 35.1

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R Q D
			SURFACE ELEVATION: 1694.3									
5		X	SHALE - Highly Weathered, Very Soft, Brown and Gray							3 6-9		
10		X	SHALE - Highly Weathered, Soft, Brown and Gray							9 21-30		
15		X	SHALE - Highly Weathered, Medium Hard, Brown and Gray							14 34-50		
20			SHALE WITH OCCASIONAL SANDSTONE LAYERS - Highly Weathered, Medium Hard with Soft Layers, Brown and Gray								100	0
25			SHALE - Highly Weathered, Medium Hard with Soft Layers, Brown and Gray								96	34
30			SHALE - Weathered, Medium Hard, Occasional Fractures, Dark Gray								98	78
35			SANDSTONE WITH FREQUENT SHALE SEAMS AND LAYERS - Weathered, Cemented, Occasional Fractures, Gray								100	56

REMARKS:

**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

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JOB NO. 090501 (Internal Job # D09193) Newton  
JOB NAME: Hwy 7 Slide - Jasper  
STATION: 463+99  
LOCATION: 46' Right of Centerline  
LOGGED BY: David Allen

DATE: September 15, 2015  
TYPE OF DRILLING: Hollow Stem Auger -  
Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 35.1

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R Q D
			SURFACE ELEVATION: 1694.3									
			Boring Terminated									
40												
45												
50												
55												
60												
65												
70												

REMARKS:

**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 9  
PAGE 1 OF 1

JOB NO. 090501 (Internal Job # D09193) Newton

DATE: September 15, 2015

JOB NAME: Hwy 7 Slide - Jasper

TYPE OF DRILLING: Hollow Stem Auger

STATION: 463+44

EQUIPMENT: CME 850

LOCATION: 46' Right of Centerline

LOGGED BY: David Allen

HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 34

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R O D
			SURFACE ELEVATION: 1697.4									
5		X	Moist, Stiff, Brown and Gray Clay with Gravel (Shale Fragments)							2 5-8		
10		X								15 25-29		
15		X	SHALE - Highly Weathered, Soft, Brown and Gray							10 14-19		
20		X	SHALE - Highly Weathered, Hard, Gray							19 60 (2")	86	0
25			SHALE WITH OCCASIONAL SANDSTONE LAYERS AND CONCRETIONS - Weathered, Medium Hard, Brown and Gray								96	74
30			SHALE WITH OCCASIONAL CONCRETIONS - Weathered, Medium Hard, Gray								100	46
35			Boring Terminated									

REMARKS:







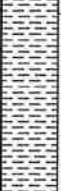
**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

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PAGE 1 OF 2

JOB NO. 090501 (Internal Job # D09193) Newton  
JOB NAME: Hwy 7 Slide - Jasper  
STATION: 462+79  
LOCATION: 46' Right of Centerline  
LOGGED BY: David Allen

DATE: September 16, 2015  
TYPE OF DRILLING: Hollow Stem Auger -  
Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 40.1

DEPTH FT.	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R O D
			SURFACE ELEVATION: 1701									
5			Moist, Stiff, Brown and Gray Clay with Gravel							4 6-9		
10			Moist, Stiff, Brown and Gray Clay with Gravel (Shale Fragments)							14 21-31		
15			SHALE - Highly Weathered, Soft, Brown and Gray							19 45-60 (10)		
20			SHALE WITH OCCASIONAL CLAY LAYERS - Highly Weathered, Soft, Occasional Fractures, Brown and Gray								77	0
25			SHALE WITH OCCASIONAL CLAY LAYERS - Highly Weathered, Soft with Medium Hard Layers, Occasional Fractures, Brown and Gray								100	0
30			SHALE WITH OCCASIONAL SANDSTONE LAYERS - Highly Weathered, Medium Hard, Brown and Gray								100	0
35			SHALE WITH OCCASIONAL SANDSTONE LAYERS AND CONCRETIONS - Weathered,								94	61

REMARKS:


**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 10  
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JOB NO. 090501 (Internal Job # D09193) Newton  
JOB NAME: Hwy 7 Slide - Jasper  
STATION: 462+79  
LOCATION: 46' Right of Centerline  
LOGGED BY: David Allen

DATE: September 16, 2015  
TYPE OF DRILLING: Hollow Stem Auger -  
Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 40.1

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R Q D
			SURFACE ELEVATION: 1701									
40			Medium Hard, Occasional Fractures, Gray								100	48
45			Boring Terminated									
50												
55												
60												
65												
70												

REMARKS:

**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 11  
PAGE 1 OF 2

JOB NO. 090501 (Internal Job # D09193) Newton  
JOB NAME: Hwy 7 Slide - Jasper  
STATION: 462+25  
LOCATION: 47' Right of Centerline  
LOGGED BY: David Allen/Paul Christenberry

DATE: September 16 and 22, 2015  
TYPE OF DRILLING: Hollow Stem Auger - Rotary Wash  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 43.4

DEPTH FT.	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R O O D
			SURFACE ELEVATION: 1709.2									
5			Moist, Soft, Brown, Clay							0 0-3		
10			Moist, Very Stiff, Brown Clay with Gravel (Shale Fragments)							9 11-13		
15			Moist, Hard, Brown Clay with Gravel (Shale Fragments)							9 16-19		
20			SHALE - Highly Weathered, Medium Hard, Gray							17 37-57		
25			SHALE WITH CLAY LAYERS - Highly Weathered, Soft, Brown and Gray								95	0
30											84	0
35												70

REMARKS:





**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 11  
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JOB NO. 090501 (Internal Job # D09193) Newton  
JOB NAME: Hwy 7 Slide - Jasper  
STATION: 462+25  
LOCATION: 47' Right of Centerline  
LOGGED BY: David Allen/Paul Christenberry

DATE: September 16 and 22, 2015  
TYPE OF DRILLING: Hollow Stem Auger - Rotary Wash  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 43.4

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			SURFACE ELEVATION: 1709.2									
			SHALE - Highly Weathered to Weathered, Soft to Medium Hard, Dark Gray								100	0
40			SHALE - Weathered, Medium Hard, Dark Gray								96	32
45			Boring Terminated									
50												
55												
60												
65												
70												

REMARKS:

**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 12  
PAGE 1 OF 2

JOB NO. 090501 (Internal Job # D09193) Newton  
JOB NAME: Hwy 7 Slide - Jasper  
STATION: 461+66  
LOCATION: 46' Right of Centerline  
LOGGED BY: Paul Christenberry

DATE: September 22, 2015  
TYPE OF DRILLING: Hollow Stem Auger -  
Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 43.2

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R O D
			SURFACE ELEVATION: 1714.2									
5		X	Moist, Stiff, Brown Clay with Gravel (Shale Fragments)							3 4-6		
10		X	SHALE - Highly Weathered, Soft, Gray							10 29-25		
15		X	SHALE - Highly Weathered, Medium Hard, Gray							20 33-40		
20			SHALE WITH CLAY LAYERS - Highly Weathered, Soft, Brown and Gray								100	0
25											94	0
30											70	0
35											52	0

REMARKS:



**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

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JOB NO. 090501 (Internal Job # D09193) Newton  
JOB NAME: Hwy 7 Slide - Jasper  
STATION: 461+66  
LOCATION: 46' Right of Centerline  
LOGGED BY: Paul Christenberry

DATE: September 22, 2015  
TYPE OF DRILLING: Hollow Stem Auger -  
Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 43.2

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R O D
			SURFACE ELEVATION: 1714.2									
			SHALE - Highly Weathered to Weathered, Soft to Medium Hard, Dark Gray								95	34
40			SHALE - Weathered, Medium Hard, Dark Gray								100	80
45			Boring Terminated									
50												
55												
60												
65												
70												

REMARKS:

**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 13  
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JOB NO. 090501 (Internal Job # D09193) Newton  
JOB NAME: Hwy 7 Slide - Jasper  
STATION: 462+32  
LOCATION: 19' Right of Centerline  
LOGGED BY: Raymond Taylor

DATE: September 23, 2015  
TYPE OF DRILLING: Hollow Stem Auger -  
Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 44

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R Q D
			SURFACE ELEVATION: 1707.9									
5			Moist, Stiff, Gravelly Clay							3 3-5		
10			Moist, Stiff, Brown Clay							7 11-13		
15			Moist, Very Stiff, Gray Clay with Gravel (Shale Fragments)							30 38-58		
20			SHALE - Highly Weathered, Medium Hard, Gray								90	0
25			SHALE WITH CLAY LAYERS - Highly Weathered, Soft, Brown and Gray								88	0
30											89	0
35			SHALE WITH OCCASSIONAL SANDSTONE								100	0

REMARKS:



**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 13  
PAGE 2 OF 2

JOB NO. 090501 (Internal Job # D09193) Newton  
JOB NAME: Hwy 7 Slide - Jasper  
STATION: 462+32  
LOCATION: 19' Right of Centerline  
LOGGED BY: Raymond Taylor

DATE: September 23, 2015  
TYPE OF DRILLING: Hollow Stem Auger -  
Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 44

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R Q D
			SURFACE ELEVATION: 1707.9									
			SEAMS - Highly Weathered to Weathered, Soft to Medium Hard, Dark Gray								90	0
40			SHALE WITH OCCASSIONAL SANDSTONE SEAMS - Weathered, Medium Hard, Occassional Fractures, Dark Gray								100	30
45			Boring Terminated									
50												
55												
60												
65												
70												

REMARKS:

**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 14  
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JOB NO. 090501 (Internal Job # D09193) Newton  
JOB NAME: Hwy 7 Slide - Jasper  
STATION: 463 + 45  
LOCATION: 18' Right of Centerline  
LOGGED BY: Stanley Bates

DATE: September 24, 2015  
TYPE OF DRILLING: Hollow Stem Auger -  
Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 35.1

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R O D
			SURFACE ELEVATION: 1699.4									
5			Dry, Soft, Brown Clay with Gravel							1 2-2		
10			Moist, Soft, Brown Clay							5 11-13		
15			Moist, Very Stiff, Brown Clay with Gravel (Shale Fragments)							20 30-52		
20			SHALE - Highly Weathered, Medium Hard, Gray							18 42-51		
25			SHALE - Highly Weathered, Soft to Medium Hard, Dark Gray								100	0
30			SHALE WITH OCCASSIONAL SANDSTONE SEAMS - Weathered, Medium Hard, Dark Gray	42							94	42
35			SHALE WITH OCCASSIONAL SANDSTONE SEAMS AND IRON CONCRETIONS - Slightly Weathered, Medium Hard, Dark Gray								100	82

REMARKS:

**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 14  
PAGE 2 OF 2

JOB NO. 090501 (Internal Job # D09193)      Newton  
JOB NAME: Hwy 7 Slide - Jasper  
  
STATION: 463 + 45  
LOCATION: 18' Right of Centerline  
LOGGED BY: Stanley Bates

DATE: September 24, 2015  
TYPE OF DRILLING: Hollow Stem Auger -  
Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 35.1

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R O D
			SURFACE ELEVATION: 1699.4									
			Boring Terminated									
40												
45												
50												
55												
60												
65												
70												

REMARKS:

**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

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JOB NO. 090501 (Internal Job # D09218) Newton County  
JOB NAME: Hwy 7 Slide  
Section 18, L.M. 11.73  
STATION: 448+29  
LOCATION: 15' Left of Centerline  
LOGGED BY: Paul Christenberry

DATE: April 26, 2016  
TYPE OF DRILLING:  
Hollow Stem Auger - Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 47.9

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R Q D
			SURFACE ELEVATION: 1814.7									
			Moist, Very Dense, Dark Brown Sand									
5		X	Moist, Very Dense, Dark Brown Sand with Some Organic Matter							24 28-26		
10		X	Moist, Very Dense, Dark Brown Sand with Some Gravel							26 60 (6")		
15		X	Moist, Medium Dense, Dark Brown Sand with Some Gravel							14 14-14		
20		X	Moist, Loose, Dark Brown Sand with Some Clay							1 2-3		
25		X	Wet, Very Loose, Dark Brown Sand with Some Clay							1 0-1		
30			SANDSTONE - Weathered, Cemented, Calcareous, Light Gray								100	88
35			LIMESTONE - Slightly Weathered, Moderately									

REMARKS: \* 22 hour water level elevation was 1808.2 feet




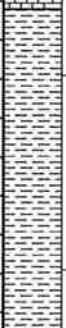


**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 15  
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JOB NO. 090501 (Internal Job # D09218) Newton County  
 JOB NAME: Hwy 7 Slide  
 Section 18, L.M. 11.73  
 STATION: 448+29  
 LOCATION: 15' Left of Centerline  
 LOGGED BY: Paul Christenberry

DATE: April 26, 2016  
 TYPE OF DRILLING:  
 Hollow Stem Auger - Diamond Core  
 EQUIPMENT: CME 850  
 HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 47.9

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R Q D
			SURFACE ELEVATION: 1814.7									
			Hard, Sandy, Gray								94	66
40			SHALE - Highly Weathered to Weathered, Soft to Medium Hard, Dark Gray								86	0
45			SHALE - Highly Weathered, Soft, Gray								100	32
			SANDSTONE WITH FREQUENT SHALE PARTINGS AND SEAMS - Weathered, Cemented, Light Gray									
50			Boring Terminated									
55												
60												
65												
70												

REMARKS: \* 22 hour water level elevation was 1808.2 feet

**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 16  
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JOB NO. 090501 (Internal Job # D09218) Newton County  
JOB NAME: Hwy 7 Slide  
Section 18, L.M. 11.73  
STATION: 448+31  
LOCATION: 7' Right of Centerline  
LOGGED BY: Paul Christenberry

DATE: April 27, 2016  
TYPE OF DRILLING:  
Hollow Stem Auger - Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 58.2

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R Q D
			SURFACE ELEVATION: 1814.7									
5		X	Moist, Medium Dense, Dark Brown Clayey Sand with Some Organics							3 10-11		
10		X	Moist, Very Dense, Dark Brown Sand							60 (5")		
15		X	Moist, Medium Dense, Dark Brown Clayey Sand with Organic Matter							4 8-11		
20		X	Moist, Medium Dense, Sand with Some Clay							4 6-7		
25		X	Moist, Very Loose, Dark Brown Clayey Sand							1 1-2		
30			SANDSTONE - Weathered, Cemented, Gray								100	80
35			SANDSTONE - Highly Weathered, Poorly Cemented, Brown								100	60

REMARKS:

**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 16  
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JOB NO. 090501 (Internal Job # D09218) Newton County  
JOB NAME: Hwy 7 Slide  
Section 18, L.M. 11.73  
STATION: 448+31  
LOCATION: 7' Right of Centerline  
LOGGED BY: Paul Christenberry

DATE: April 27, 2016  
TYPE OF DRILLING:  
Hollow Stem Auger - Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 58.2

DEPTH FT.	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R Q D
			SURFACE ELEVATION: 1814.7									
			Moist, Soft, Light Gray Clay								58	10
40			SHALE - Weathered, Medium Hard, Gray								100	68
45											98	72
50			SANDSTONE WITH FREQUENT SHALE PARTINGS AND SEAMS - Slightly Weathered, Cemented, Slightly Calcareous, Light Gray								98	98
55											100	82
60			SHALE WITH OCCASIONAL SANDSTONE PARTINGS - Slightly Weathered, Medium Hard, Gray									
			Boring Terminated									
65												
70												

REMARKS:

**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 17  
PAGE 1 OF 2

JOB NO. 090501 (Internal Job # D09218) Newton County  
JOB NAME: Hwy 7 Slide  
Section 18, L.M. 11.73  
STATION: 449+03  
LOCATION: 7' Right of Centerline  
LOGGED BY: Steve Faulkner

DATE: April 28, 2016  
TYPE OF DRILLING:  
Hollow Stem Auger - Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 58.3

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R O D
			SURFACE ELEVATION: 1810.4									
			ASPHALT									
			BASE									
5			Moist, Soft, Brown Sandy Clay with Some Gravel (Rock Fragments)							3 2-2		
10			Moist, Soft, Brown Sandy Clay with Cobbles and Boulders							1 1-2		
15			Moist, Very Dense, Brown Gravel (Sandstone Fragments) with Sand							14 60 (4")		
			Moist, Hard, Reddish Brown Sandy Clay									
			Gravel and Cobbles (Rock Fragments)									
20			Moist, Hard, Reddish Brown Sandy Clay with Gravel (Rock Fragments)							8 19-16		
25			Wet, Loose, Reddish Brown Clayey Sand*							2 4-4		
30			SHALE - Highly Weathered, Medium Hard, Gray							25 60 (3")		
			SANDSTONE - Weathered with Highly Weathered Layers, Cemented with Poorly Cemented Layers, Gray to Brown							10 (0")	100	65
			LIMESTONE - Weathered with Highly Weathered Layers, Moderately Hard, Gray									

REMARKS: \* Hit Water Stratum at 25.0 feet below ground level.

**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 17  
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JOB NO. 090501 (Internal Job # D09218) Newton County  
JOB NAME: Hwy 7 Slide  
Section 18, L.M. 11.73  
STATION: 449+03  
LOCATION: 7' Right of Centerline  
LOGGED BY: Steve Faulkner

DATE: April 28, 2016  
TYPE OF DRILLING:  
Hollow Stem Auger - Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 58.3

DEPTH FT.	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R Q D
			SURFACE ELEVATION: 1810.4									
40			SHALE - Weathered, Medium Hard, Dark Gray								88	72
45			SANDSTONE WITH FREQUENT SHALE PARTINGS AND SEAMS - Slightly Weathered, Cemented, Gray								99	80
50											100	58
55			SHALE WITH FREQUENT SANDSTONE PARTINGS AND SEAMS - Slightly Weathered, Medium Hard, Dark Gray								100	89
60			Boring Terminated								100	74
65												
70												

REMARKS: \* Hit Water Stratum at 25.0 feet below ground level.

**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 18  
PAGE 1 OF 2

JOB NO. 090501 (Internal Job # D09218) Newton County  
JOB NAME: Hwy 7 Slide  
Section 18, L.M. 11.73  
STATION: 449+02  
LOCATION: 15' Left of Centerline  
LOGGED BY: Paul Campbell

DATE: May 5th, 2016  
TYPE OF DRILLING:  
Hollow Stem Auger - Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 43.5

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C R	% R O D
			SURFACE ELEVATION: 1811.2									
5			Asphalt and Sand with Some Organic Matter							7 7-7		
10			Moist, Medium Dense, Brown Sand with Some Gravel							6 4-6		
15			Moist, Loose, Reddish Brown Sand							34 60 (10")		
20			Wet, Loose, Reddish Brown Clayey Sand							2 2-5		
25			LIMESTONE - Slightly Weathered, Moderately Hard, Sandy, Light Gray							60 (1")	100	100
30			LIMESTONE - Slightly Weathered, Moderately Hard, Sandy, Light Gray								100	100
35			Moist, Soft, Light Gray Clay									
			LIMESTONE - Slightly Weathered, Moderately Hard, Sandy, Light Gray								100	74

REMARKS: Split spoon catcher broke at approximately 15.8 feet; poor sample recovery

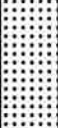

**ARKANSAS HWY. & TRANS. DEPARTMENT  
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 18  
PAGE 2 OF 2

JOB NO. 090501 (Internal Job # D09218)      Newton County  
JOB NAME: Hwy 7 Slide  
Section 18, L.M. 11.73  
STATION: 449+02  
LOCATION: 15' Left of Centerline  
LOGGED BY: Paul Campbell

DATE: May 5th, 2016  
TYPE OF DRILLING:  
Hollow Stem Auger - Diamond Core  
EQUIPMENT: CME 850  
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 43.5

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C C R	% R Q D
			SURFACE ELEVATION: 1811.2									
			SANDSTONE - Unweathered, Well Cemented, Conglomeratic, Calcareous, Light Gray								86	76
40			SHALE WITH OCCASIONAL SANDSTONE PARTINGS - Slightly Weathered, Medium Hard, Occasional Fractures, Gray								100	52
45			Boring Terminated									
50												
55												
60												
65												
70												

REMARKS: Split spoon catcher broke at approximately 15.8 feet; poor sample recovery